Natural Heritage & Endangered Species Program

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Northern Red-bellied Cooter

Pseudemys rubrivenrtis

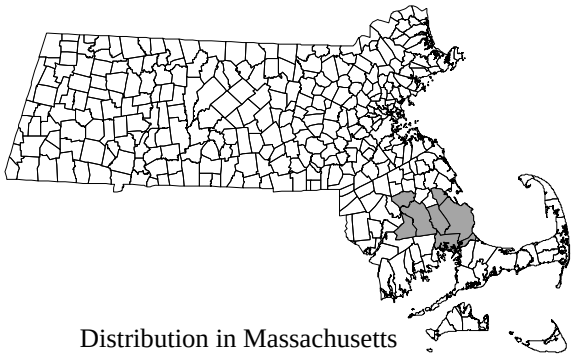
State Status: **Endangered**
Federal Status: **Threatened**

DESCRIPTION: The Red-bellied Cooter is a large 26-32 cm (10 -12 in.) basking turtle that can weigh up to 4.5 kg (10 lbs). The carapace (upper shell) of an adult Red-bellied Cooter is black to mahogany colored with light chestnut or red markings. The tip of the upper jaw is notched, and a yellow arrow-shaped stripe runs along the neck to atop the head. The plastron (bottom shell) of the males is pale pink overlaid with dark mottling, while females have red plastrons with borders of grey along the seams of the shell plates. The color of the head, neck, limbs, and tail is black, with yellow or ivory lines. Both sexes usually become progressively melanistic (blacken) with age. Males are smaller, have longer tails and longer front claws than females.

Hatchlings are about 2.5 cm (1 in.) long and are more circular in shape than adults. They have a slightly keeled olive green carapace marked with greenish-yellow hieroglyphics. Like adults, juveniles have yellow stripes on the head, neck, and limbs.

SIMILAR SPECIES: Painted Turtles (*Chrysemys picta*) are often mistaken for Red-bellied Cooters. Both have yellow markings on the head and neck and both may have reddish plastrons. Red-bellied Cooters lack a yellow spot behind the eye, have alternated patterned scutes across the back (unlike the Eastern Painted Turtle), are up to half a foot longer (as adults), and have a carapace that is normally flattened or slightly depressed on top. The Red-bellied Cooter's plastron is coral red or pink often with dark markings and circular spots along the perimeter; whereas, the Painted Turtle plastron in Plymouth County is usually a solid orange or yellow (no dark markings) and a striped perimeter.

RANGE: The Northern Red-bellied Cooter in is an isolated disjunct population in Massachusetts and is currently confined to ponds within Plymouth County. This population of turtles was formerly described as a distinct subspecies, *P. rubriventris bangsi* (Plymouth Redbelly Turtle). The primary range of the Red-bellied Cooter is from the coastal plain of New Jersey south to North Carolina and inland to West Virginia. Archaeological evidence from Indian encampments suggests that before European settlement, this turtle occurred in one continuous population throughout coastal Massachusetts and south to North Carolina.



Distribution in Massachusetts
1980 - 2006
Based on records in Natural Heritage Database

HABITAT IN MASSACHUSETTS: In Massachusetts, the Red-bellied Cooter primarily inhabits freshwater ponds of varying sizes that have abundant aquatic vegetation, although there have been a few observations along riverways. For nesting, the Red-bellied Cooter requires sandy soil on land surrounding the pond.

LIFE CYCLE & BEHAVIOR: Red-bellied Cooters overwinter at the bottom of ponds and most likely in streams. During the active season they are almost exclusively in water. Females will come out to nest and occasionally individuals will migrate from one water body to another. Red-bellied Cooters bask on logs and woody debris throughout the active season. This is particularly important during the spring months to increase their body temperature in order to feed.

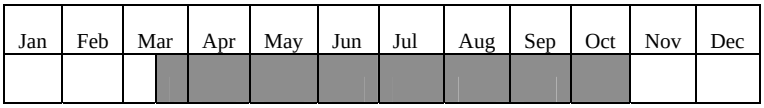
The Red-bellied Cooter feeds primarily on aquatic vegetation, particularly milfoil (*Myriophyllum spp*.). Especially when young, it may occasionally eat crayfish and invertebrates.

The behavior steps of mating have not been reported. However, it is known that mating occurs in shallow water in the spring.

In late June or early July, the female begins nesting activity. Red-bellied Cooters have been found nesting on both vegetated and unvegetated areas and in disturbed as well as undisturbed soils. Females typically nest within 91 m (100 yds) from the waters edge. Females dig flask shaped nests approximately 10 cm (4 in.) deep. In Massachusetts, females typically lay 10-20 eggs and incubation lasts approximately 73 to 80 days. Red-bellied Cooters exhibit temperature dependant sex determination; warmer nest site temperatures produce females and cooler sites produce males. Hatchlings emerge from late August through October. Hatchling emergence depends more on the conditions of the substrate, temperature patterns, and nest site location than on the timing of egg deposition by the females. Rainfall may also affect emergence. Some hatchlings may overwinter in the nest if the late summer weather is unseasonably cool. Once out of the nest chamber, hatchlings head for the pond.

Female Red-bellied Cooters reach maturity at approximately 15-20 years of age (later than the males). Sexual dimorphism may be apparent at 5 to 7 years. The life expectancy is believed to be 40 to 55 years.

ACTIVE PERIOD



THREATS: The Red-bellied Cooter is a specialist with biological needs that make it vulnerable to a variety of environmental changes. Available nesting habitat has decreased over the last two decades due to residential construction and changes in certain land use practices, such as controlled burning. In the past, areas adjacent to the ponds were periodically burned creating pitch pine/scrub oak barrens dotted with openings and grasslands. These openings were good nesting areas, allowing the heat of the sun to penetrate and incubate the eggs. Today, these areas are not burned and as a result, are more frequently closed canopy forests. Residential expansion has also introduced pet predation, increased population densities of natural predators, collection, pollution, and road mortality.

In some instances, herbicide use in ponds to decrease pond vegetation and the infiltration of herbicides from adjacent cranberry bogs is believed to have altered the Red-bellied Cooter's food source and exposed it to chemical contamination. These impacts combined with the species' late maturation age and low rate of reproduction (less than one-third of females reproduce yearly), have made it difficult for the Red-bellied Cooter to thrive. Hatchling mortality is very high for this species, with intense predation on the eggs by skunks and raccoons (which increased in population size as residential areas increased) destroying as many as half of the Red-bellied Cooter's existing nests. Predation of hatchlings also occurs from bullfrogs and probably from wading birds and predatory fish such as pickerel and bass.

MANAGEMENT RECOMMENDATIONS:

Continued research, sound management, habitat preservation, and education are vital to the recovery of the Northern Red-bellied Cooter.

In the area of research, ongoing studies of pesticide and heavy metal contamination on existing populations are important as this contamination has direct impact of the survival of this species.

Management needs include periodic monitoring of ponds that were formerly inhabited and the ongoing search for additional populations. Annual efforts should be made to locate and protect nests at ponds with major populations either by protecting known nests with wire or screen enclosures, or by trapping and removing the predators themselves. Also of primary importance is the need to protect occupied and potential habitat while improving habitat at ponds with known populations by clearing or creating nesting beaches and providing basking sites where necessary.

The Natural Heritage and Endangered Species Program has been running a headstarting program for Red-bellied Cooters since 1980. MassWildlife in coraporation with others, in particular John Crane and Dave Taylor, collect about 100 hatchlings each year and raise them in captivity for the first year, in order to produce yearlings that at the time of release are approximately the size of a 3 year old in the wild. The larger yearlings are significantly less likely to be predated and therefore make it to adulthood. An evaluation of the headstart program is needed to assess recovery status and to set additional program goals.

In addition to research and management efforts, education and law enforcement are of the utmost importance. The laws protecting the Red-bellied Cooter and its habitat need to be more widely publicized and enforced as necessary. Biologists should continue to work with the cranberry industry and other agricultural enterprises to avoid potentially harmful activities. Education of private landowners and the public at large to increase awareness is needed to protect and preserve this rare species in Massachusetts.

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